

[54] METHOD FOR PLATING A THREADED MEMBER WITH AN IN SITU THREAD PROTECTOR

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[21] Appl. No.: 423,484

[22] Filed: Sep. 24, 1982

Related U.S. Application Data

[62] Division of Ser. No. 205,847, Nov. 10, 1980.

[51] Int. Cl.³ B05D 3/00; B05D 3/12

[52] U.S. Cl. 427/242; 138/96 T; 204/23; 427/300

[58] Field of Search 427/242, 300; 204/23, 204/25; 138/96 T

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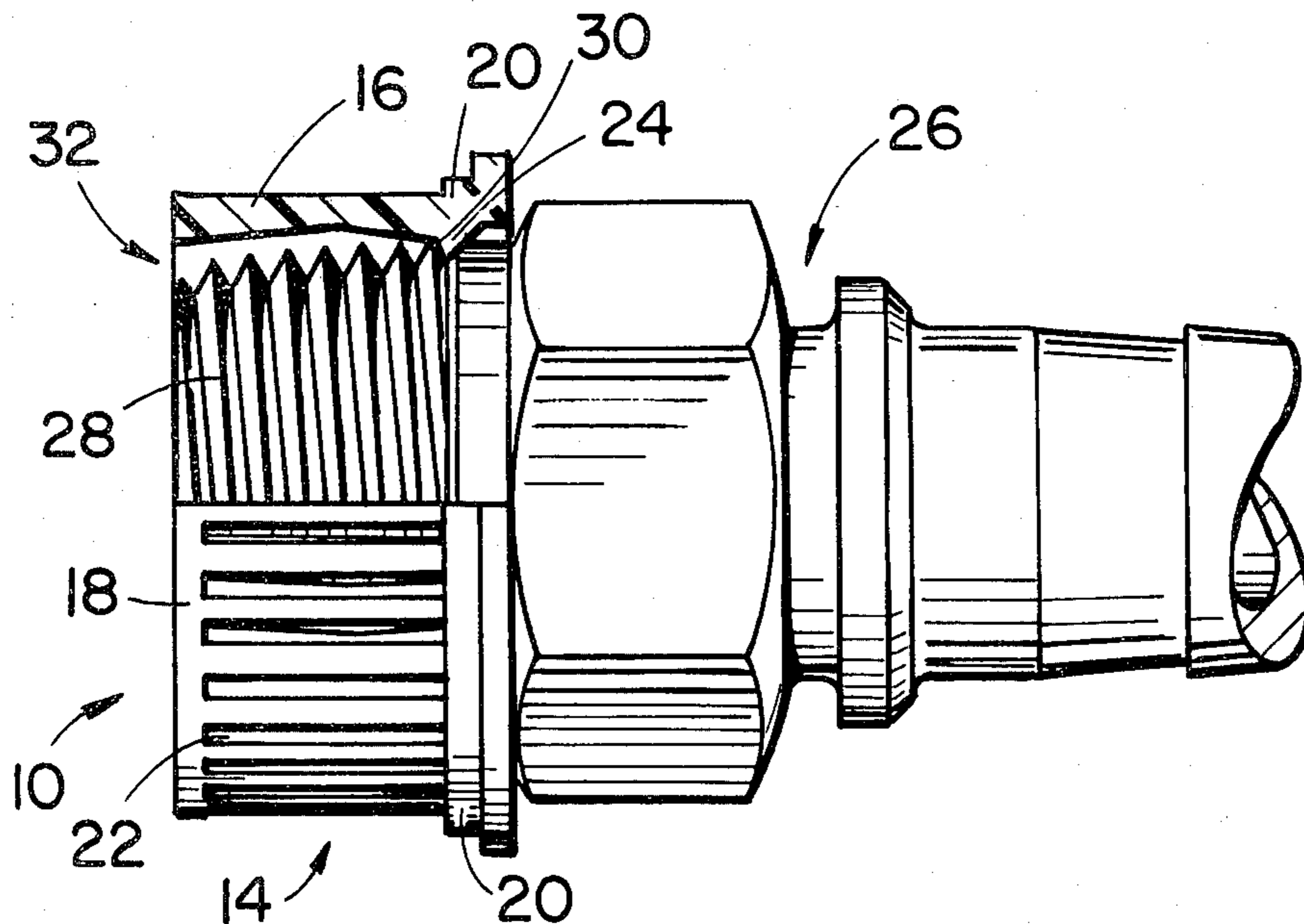
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[57] ABSTRACT

A polymeric thread protector with a generally sleeve-like cylindrically shaped body having a perforate side-wall and a means for retaining the body to a threaded member, is positioned over threads of the threaded member and is retained in place while the threaded member is placed in a plating solution and plated.

2 Claims, 5 Drawing Figures



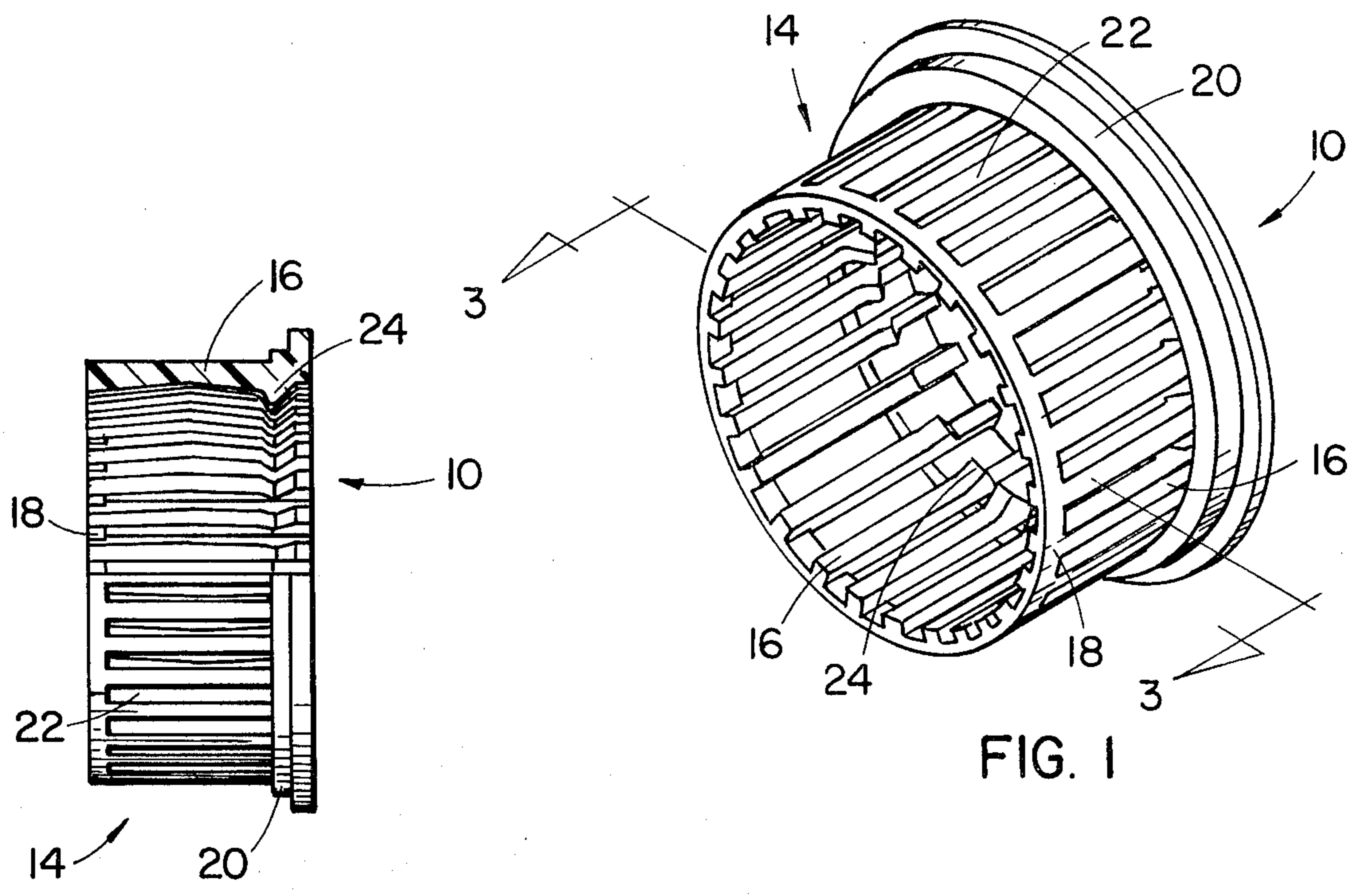


FIG. 1

FIG. 2

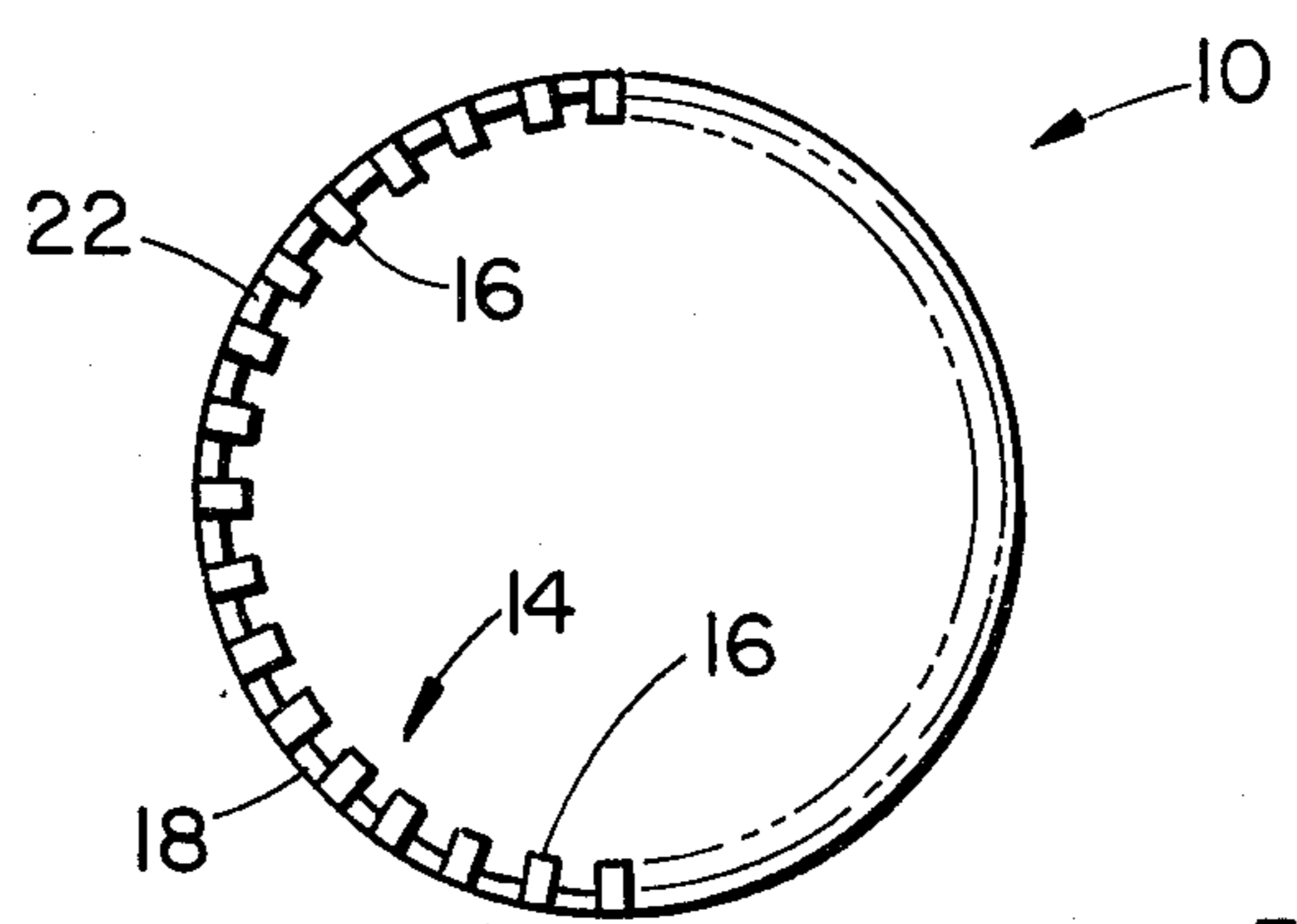


FIG. 3

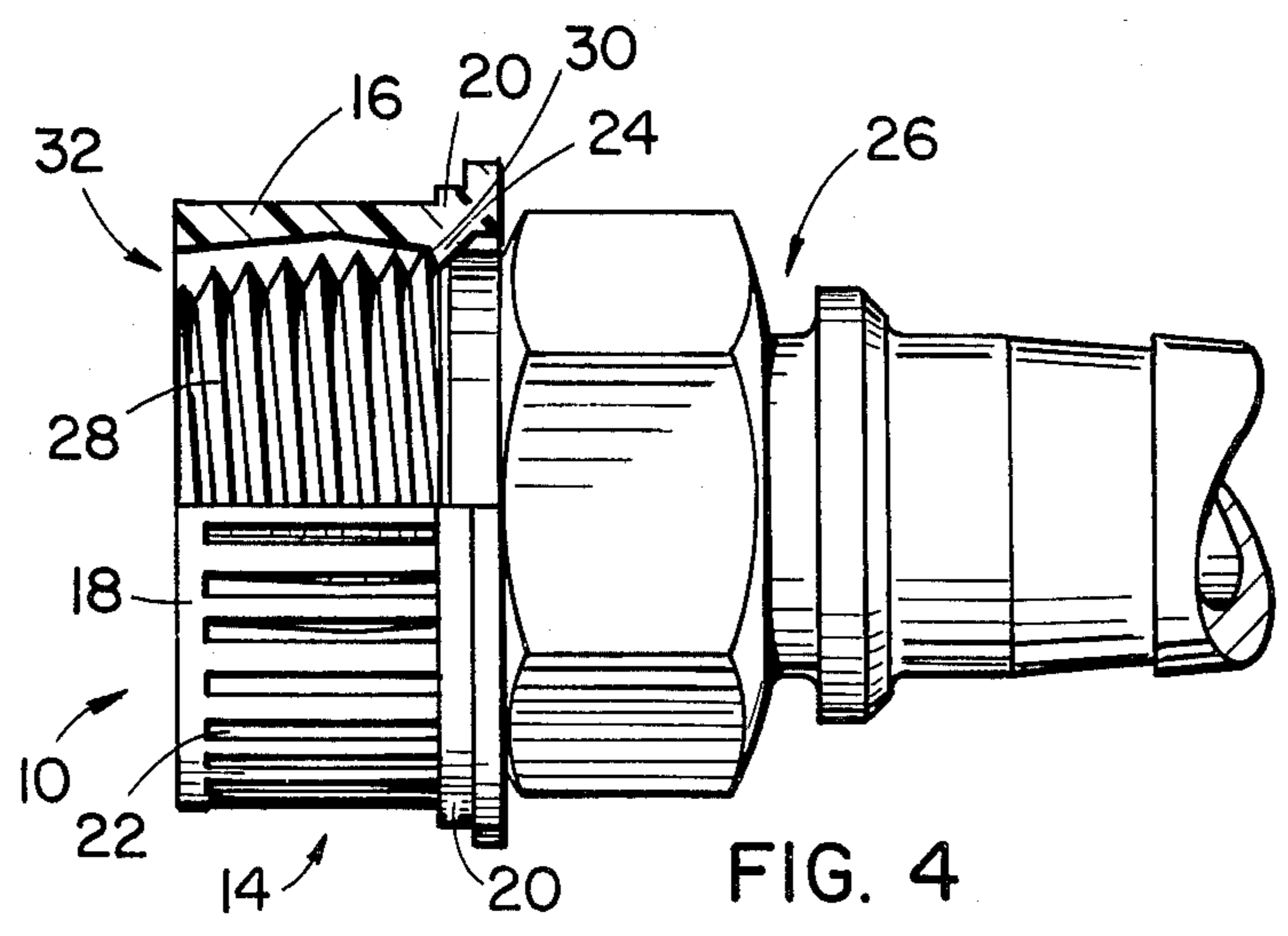


FIG. 4

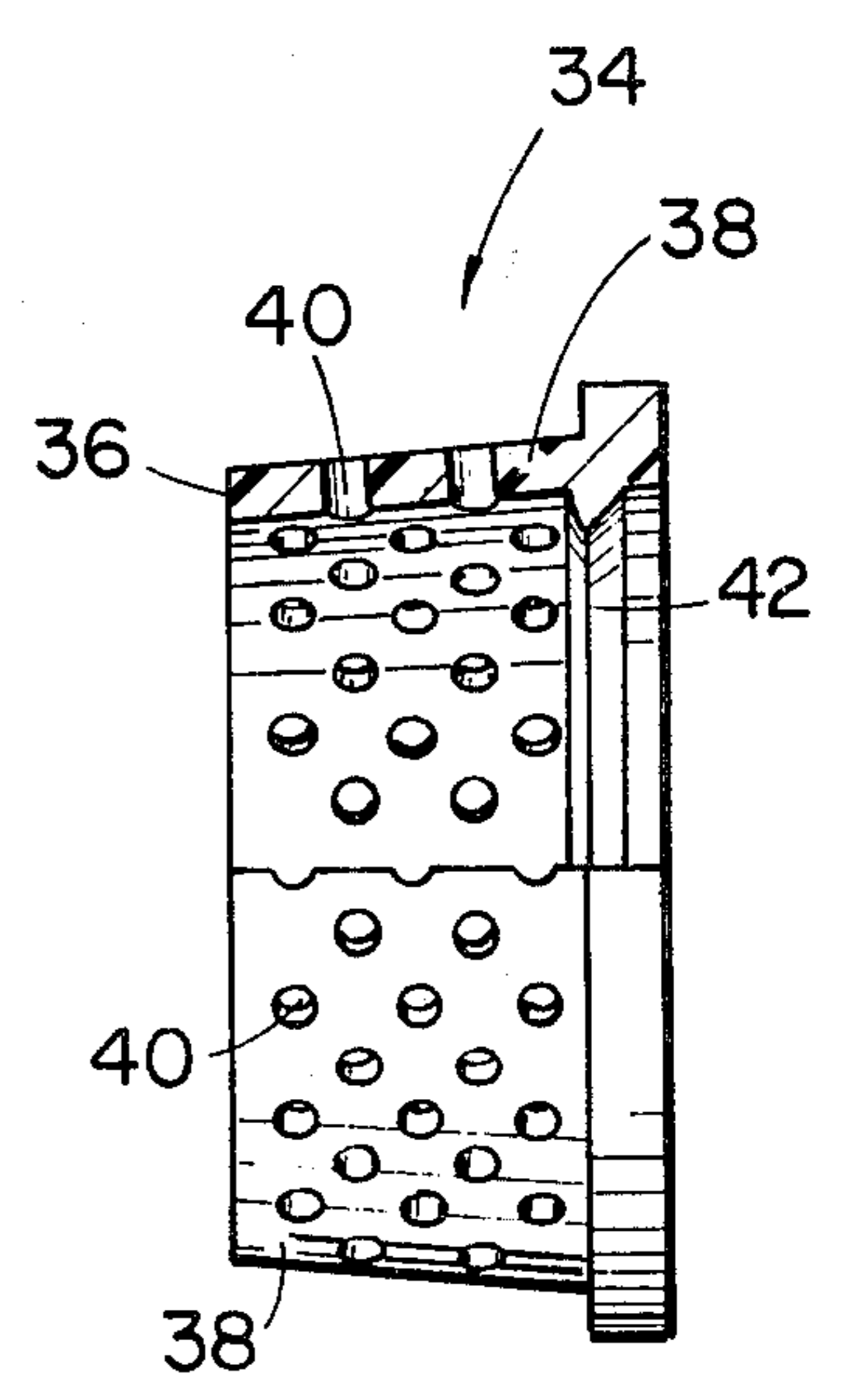


FIG. 5

METHOD FOR PLATING A THREADED MEMBER WITH AN IN SITU THREAD PROTECTOR

This is a division of application Ser. No. 205,847, filed Nov. 10, 1980.

BACKGROUND OF THE INVENTION

The invention relates to a method for plating threaded parts having an in situ thread protector. Protectors are commonly placed juxtaposed threads of a part of minimize damage by handling such as during fabrication or shipment. Known protectors have imperforate sidewalls that are satisfactory to shield threads from mechanical damage or to cap or plug a bore at a threaded end to preclude contamination.

Some threaded parts must be electrochemically plated to make them corrosion resistant. In some instances, protectors are placed on threads immediately after they are formed to prevent damage when bumped with other parts. The protectors are removed for plating and the parts placed in spaced apart fashion in racks to ensure against thread damage. The racks are placed in a bath and the parts are plated. Protectors are replaced after plating to protect the threads until the parts are used. Of course, the first cycle of installing and removing the protectors may be eliminated when the initially formed parts are placed in spaced apart fashion in plating racks immediately after the threads are formed. In either case, the parts are individually placed in racks so there is minimal thread contact with other unplated parts. The problem of removing and replacing a thread protector during various part manufacturing stages and the requirement for rack plating unprotected threaded parts are sought to be overcome by the present invention.

SUMMARY OF THE INVENTION

In accordance with the invention, a method for plating a threaded member having an in situ thread protector is provided. The thread protector has a generally cylindrically shaped polymeric body with a perforate sidewall sufficient for allowing ingress of a plating solution. The body includes a means such as a rib or protuberance for retaining it to a threaded part. In accordance with the method of the invention, the protector is assembled to a part after threads have been formed. The protector remains in place during plating with the threads exposed to a plating solution. Threaded parts with protectors may be placed atop one another in a barrel without incurring damage to the threaded portion and without significantly affecting the quality of the plating. Barrel-type plating offers significant economical manufacturing advantages over rack plating because more parts can be handled in the same size plating bath.

Other aspects and advantages of the invention are described in reference to the drawings wherein:

FIG. 1 is an isometric view of the thread protector used in the method of the invention;

FIG. 2 is a partially cutaway side view showing a radial section;

FIG. 3 is an axial cross section taken along the line 3-3 of FIG. 1; and

FIG. 4 is a partially cutaway side view of the protector as assembled on a threaded part (i.e., a male stem portion of a hose coupling).

FIG. 5 is a partially cutaway side view showing an alternate form of the thread protector.

DESCRIPTION OF PREFERRED EMBODIMENT

In the drawings, a thread protector 10 has a generally cylindrically shaped polymeric body with a perforate sidewall 14. The body is made with any of the suitable polymeric materials such as polyethylene, polypropylene, ethylene vinyl acetate, and the natural or synthetic rubbers or blends thereof. The protector is easily formed using known injection molding processes. The term "generally cylindrically shaped" is meant to include the various sidewall shapes which a thread protector may have such as frusto-conical, ribbed, ridged, undulating, or the like. In all cases, the body forms a sleeve-like member.

In FIGS. 1 through 4, the perforate sidewall 14 is formed by a plurality of spaced apart circumjacent ribs 16 oriented lengthwise with the body axis. The ribs attach at each of their ends to circumferential rings 18, 20 and the space between the ribs define perforations 22. Optionally, one ring 20 is larger than the other 18 to provide a body taper or enhance stiffness. The ribs optionally extend radially inward of the rings to reduce the internal surface area that may be exposed to a threaded part. As shown, the protector may be tapered to accommodate a tapered thread. A retaining means in the form of a plurality of protuberances 24, projects radially inwardly juxtaposed one of the rings. Preferably, a protuberance projects from each rib and has a generally V-shaped cross section for engaging a thread of the threaded part.

The protector is assembled onto a threaded part such as a male stem 26 of a hose coupling, by screwing or by pushing it axially over the threads 28 to deflect the protuberances. The retaining means engages a thread portion 30 and holds the protector to the body juxtaposed the threads. Preferably, the protector is sized so there is a clearance 32 between the ribs and threads. Of course, the polymeric body may bend to an egg shape so that there is point or line contact of the ribs with the threads. The ribs define a means for protecting threads and a means for ingress of a plating solution past the protector and to the threads as is best seen in FIG. 4. The slots, or perforations between ribs allows entry of a plating fluid to the juxtaposed threads. Similarly, the circumferentially spaced protuberances allow ingress and flow of a plating fluid in the area where the protector is retained to the threaded member.

In use, the sleeve-like thread protector is positioned over a threaded portion of a member to be plated such as a male stem of a hose coupling as shown by FIG. 4. The retaining means engages the part and holds the protector with the ribs juxtaposed the threads. The protected part may then be stacked in bulk with other unplated parts for further processing such as degreasing and plating. The perforate wall exposes the threads to the plating solution so that the threads may be plated using known electrochemical processes. The plating solution is free to flow around the threads and protuberances without restriction that would affect acceptable plating. Either rack plating or barrel plating techniques may be used with the advantage that the protectors do not have to be repeatedly removed and replaced during part manufacture.

ADDITIONAL SPECIES

In FIG. 5, an alternate form of the thread protector is shown. A thread protector 34 has a generally cylindrical body 36 with a perforate sidewall 38 wherein the perforations are a plurality of circumjacent apertures. 40. A retaining means in the form of a circumferential rib 42 extends from an inner surface of the body. The thread protector may be used as above described.

What is claimed is:

1. A method for plating and protecting at least one threaded member comprising the steps of:

positioning a sleeve-like polymeric thread protector having a perforate sidewall over threads of the threaded member and retaining the protector in position over the threads;

placing the threaded member with polymeric protector in a plating solution and exposing the threads to the

solution through the perforate sidewall; plating the threaded member and

retaining the thread protector over the threads and protecting the threads until the threaded member is ready for use.

2. A method for barrel plating a plurality of threaded members comprising the steps of:

positioning sleeve-like polymeric thread protectors having perforate sidewalls over threads of each threaded member and retaining the protectors in position over the threads;

placing the threaded members with retained polymeric protectors atop each other and in a barrel of plating solution; and

plating the threaded members by exposure to the plating solution through the perforate sidewall of each protector.

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